

### Office Action Summary

**Application No.**

10/565,555

**Applicant(s)**

HAYASHI ET AL.

**Examiner**

Vu Nguyen

**Art Unit**

4171

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/DE)
- Paper No(s)/Mail Date 01/23/2006, 09/14/2006
- 4) ☒ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. 6,245,832) in view of Dupont et al. (WO-2001/06057).

Notes: U.S. Pat. No. 7,138,160 is being relied upon as an English translation of WO-2001/06057.

4. Regarding claims 1-3 and 5-7, Claim 1 recites an aqueous ink comprising a dispersant, a colorant, and an aqueous medium; wherein the dispersant is a crosslinked polymer having  $M_w$  of 1,000-100,000 and containing a crosslinkable monomer having two or more vinyl groups in one molecule, an aromatic monomer, and an ionic monomer. Claim 2 recites the dispersant of claim 1 to comprise 0.01-5 mol% of a

Art Unit: 4171

crosslinkable monomer, 30-90 mol% of an aromatic monomer, and 5-65 mol% of an ionic monomer. The ionic monomer is specified to be anionic (Claim 3) and the dispersant-to-colorant weight ratio is specified as 1:1-1:30 (Claim 5). The colorant is specified as a pigment (Claim 6) and a carbon black pigment (Claim 7).

5. Corresponding to the recited limitations, Suzuki teaches an aqueous ink comprising a colorant, a dispersant, and water; wherein the dispersant comprises hydrophilic and hydrophobic monomers (Abstract). The dispersant has  $M_w$  of 3,000-15,000 (col. 4, line 15). The colorant includes various pigments, including carbon black (col. 5, line 36). The dispersant/colorant weight ratio is 1:1-1:10 (col. 5, line 26 and col. 6, lines 53-54). Suzuki fails to specifically teach a dispersant having the recited compositions.

6. Dupont teaches a crosslinked polymer to be used as a dispersant or in color coating (col. 3, lines 16-18 & 53). Said polymer is water-soluble (col. 3, line 39) and comprises 25-45 wt% of an aromatic monomer, 30-65 wt% of an ionic monomer, 0-30 wt% of a non-ionic monomer, and 0-5 wt% of a crosslinkable monomer (col. 4, lines 29-58). These numbers, when converted to mole percents, overlap the claimed numbers. The disclosed ionic monomer includes anionic monomers.

7. Dupont also teaches that the disclosed crosslinked polymer can be employed to enhance the compatibility with other additives, including pigments (col. 1, line 28), in a composition, viscosity control, coating performance, and reduce bleeding (col. 1, lines 63; col. 2, lines 1-11 & 22-23).

8. In light of these benefits, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the dispersant taught by Dupont with the ink taught by Suzuki since the invention by Suzuki is also directed to improving viscosity control to prevent inkjet nozzle clogging and reducing bleeding (col. 2, lines 9-17).

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. 6,245,832) in view of Dupont et al. (WO-2001/06057) and Devonport et al. (US 2003/0232914).

10. Claim 4 depends on claim 1 and specifies the ionic monomer to be a cationic monomer.

11. Devonport teaches a crosslinked dispersant comprising a cationic monomer [0013 & 0015]. The so-disclosed dispersant is used to disperse pigments and directed to an aqueous composition [0007]. Further, the disclosure suggests that, as far as a dispersant for dispersing pigment in an aqueous medium is concerned, anionic and cationic monomers are functionally equivalent [0013].

12. In light of the teachings by Devonport, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to include a cationic monomer, if so desired, to the composition taught by Dupont and combine the so-prepared dispersant with the ink taught by Suzuki because, with respect to pigment dispersion, anionic and cationic monomers are functionally equivalent.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

Vu Nguyen  
Examiner  
Art Unit 4171